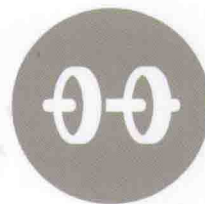
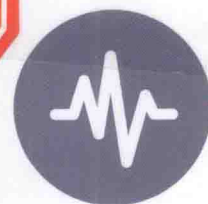




the patient revolution

How **Big Data** and **Analytics** Are Transforming
the **Health Care Experience**

Krisa Taylor



WILEY

The Patient Revolution

*How Big Data and Analytics Are
Transforming the Healthcare
Experience*

Krisa Tailor

WILEY

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Preface

Our healthcare system may be broken, but the opportunities to fix it are abundant. That's why I embarked on a remarkably exciting journey to write this book. Writing a book about healthcare, though, is just as overwhelming as it is exciting. On one hand, we have some of the biggest transformations happening today across the industry, and on the other hand, there are a growing number of questions about how to change. It's without doubt that the path to healthcare innovation is filled with unknowns.

However, I'm hopeful that by leading with empathy and by empowering the patient, we can change how healthcare works. I envision a newly designed system that's focused on both sickness and wellness, in which health is seamlessly integrated into our daily lives, and where care is so uniquely personalized that no two people are provided identical treatments.

This shift will happen by taking healthcare into the experience economy, where patients are now consumers and consumers are active participants in their healthcare. The new health economy is about the totality of health, not the occasional encounters with the system that we're used to. Unique service experiences are crafted for each individual, and they stretch well beyond the four walls of a doctor's office. They consider every element across people, process, and place, and through an unwavering consistency in delivering value, these experiences result in more engaged healthcare consumers.

Data and analytics are what will power the new health economy, and with their use, technology will become so powerful that we won't even notice it's there. Just imagine receiving a custom recommendation from your wearable device on what to order as you walk into a new restaurant. Little do you know that it's information like your health goals, historic calorie counts, food preferences, and location, all working with analytics and millions of other data points behind the scenes, to give you the information you need at exactly the right time. Or, imagine if you were a clinician and could receive personalized

diagnoses and proposed interventions automatically within your patients' health records. Analytics would transform unimaginable amounts of data, like doctors' notes, lab tests, and medical imaging on millions of individuals, to create personalized and optimal recommendations.

These are some of the ideas about next-generation healthcare that I sought to shed light on in this book. I love to explore the intersection of healthcare, technology, and human-centered design, and bringing together these three areas, which I'm so passionate about, is what made this book-writing journey special for me.

My hope is that you expand your thinking of the possibilities of technology and data in healthcare, and that you are encouraged to innovate through a lens of human-centeredness. Whether it's new healthcare products, services, or policies that we're creating, if we focus on the needs of individuals and meeting them wherever they may be in their health journey, we'll reach our healthcare system's ultimate goal of keeping people healthy.

Acknowledgments

There are many individuals who have inspired and supported me in my career and book-writing journey, a few of whom I'd like to mention.

First, I'd like to thank Dr. Jim Goodnight, CEO of SAS, for both believing in me and investing in me. I would not have been where I am in my career without your support.

In 2013, I was given the opportunity to work in SAS's Health and Life Sciences Global Practice, to develop and manage a new healthcare product. I am grateful to all the individuals who collaborated with me on this work, including Bryan Engle, Matt Gross, and Deidra Peacock. Further, I'm fortunate to work with the amazing individuals on my team who are passionate about what they do and who inspire the people around them, including Patrick Homer, Dr. Mark Wolff, and Laurie Rose. Additionally, I'd like to thank my friend and colleague, Dr. Graham Hughes, for his insights and mentorship over the last several years.

My passion for healthcare innovation and design thinking grew tremendously after working with DXLab, and I'd like to thank CEO Lance Cassidy for being a constant source of inspiration, for providing an excerpt for the book, and for his creative guidance. I'm grateful to the entire DXLab team, including Lance, Engin Kapkin, and Matt Bell, for their work on the mind map and experience blueprint.

Finally, I'd like to thank my family—my mom, my dad, and my sisters, Tina and Sunaina—for their unwavering love and support.

About the Author

Krisa Tailor is a Global Industry Consultant in SAS's Health & Life Sciences Global Practice, where she helps healthcare organizations worldwide to address today's most pressing healthcare issues. She joined SAS in 2008, and has since then worked across a variety of areas within healthcare, including policy, product management, and consulting. She is also the CEO and co-founder of Remedy—a digital health platform for managing chronic pain (remedymypain.com).

Krisa is passionate about next-generation healthcare products and services, health analytics, digital health, and design thinking. You can read her insights about these topics and others on her social media and her blog.

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The Patient Revolution

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PART I

Think

CHAPTER 1

Introduction

PAIN POINTS

One thing that many of us SAS employees have in common, aside from our love for free M&M's and Zumba class at lunch, is something a little less glamorous. It's unfortunately pain: back pain, shoulder pain, neck pain, you name it. But it isn't unique to SAS. Many corporations, especially large software companies like us, share the same challenge. With over 5,000 people on our Cary, NC, campus, we definitely have our fair share of hunched-over-their-computer-screen employees.

Don't take me wrong, though; SAS isn't one of Fortune's top places to work for nothing. While we have world-class healthcare, a wonderful fitness center, and an ergonomics department all onsite, we, however, can't escape the fact that some jobs require long periods of sitting. Well, it turns out that sitting is really bad for you and can evolve into some serious chronic pain. And unfortunately, the M&M's don't relieve pain.

Chronic pain has become so widespread that one out of three Americans suffers from it and it costs our nation over \$600 billion a year, which is more than the yearly costs for cancer, heart disease, and diabetes.¹ That's probably the least alarming statistic. Lower back pain, for example, affects 80 percent of the adult population and is the number-one cause of lost workdays in the United States.² And often, that's just the beginning of the vicious pain cycle; chronic pain can lead to obesity and chronic diseases such as diabetes, and to injuries and employment disabilities, not to mention the loss of productivity and costs to individuals and employers like SAS. But it's not just the adult population who's in pain. Have you ever heard of "text neck"? The younger generations—whose lives revolve around mobile and tech—are experiencing pain as young as in their teenage years; so much so that it's estimated that 25 percent of today's young adults will become disabled before they retire.³

Pain is tricky and confusing in so many ways, which makes it a really difficult problem to tackle. It can fluctuate a lot in intensity, occur in multiple places at once, and it doesn't always appear where the problem originates from. It really doesn't help solve the mystery when the pain in your right knee is contributing to a problem in your left gluteus. (Yes, that's how strange it is.) In a nutshell, it's a hard thing to get to the bottom of. Listening to so many pain stories over the years, I found that

people often accept pain as a regular part of their lives. There was my friend Leigh, who was visiting a chiropractor biweekly for five years straight—it was a part of his Friday routine; my colleague John, who was in so much pain for two years that he one day found himself lying on his office floor unable to get up; and Melissa, whose lower back pain that she kept avoiding eventually led to severe knee pain. And there was my own experience in which my long nights of sitting (thank you, grad school) led to pain all over my right side. It was beyond physical, though; the emotional toll it took on all of us was draining. Managing the consequences of pain was tough. Tracking it was tough. Finding a solution was tough. I really wanted to do something about it.

Sometime last year I had an idea that could possibly help people manage their pain better. And after seeing some of the outrageous statistics, I was convinced that there was a way to curb *some* of the \$600 billion in costs. So about 30 seconds after my brainwave moment (I admit I briefly felt as if I'd solved all the world's problems), I called my friend Lance, who's the CEO of DXLab—a local design consultancy that creates remarkable products and services. Following an hour-long phone conversation about the pains of pain, Lance and I mapped out a plan for incubating my idea and we were on our way.

BIRTH OF A START-UP

Lance and his team at DXLab use a process called *design thinking* to take ideas to implementation in a short period of time. Design thinking is a human-centered approach to innovation that translates observations into insights and insights into products and services that improve lives.⁴ I've been a fan of the methodology since I was introduced to it during my days at NC State University, because of the way it converges creativity with business innovation. Its emphasis on human needs is what drives the approach and is what makes it ideal for solving healthcare challenges.

The process that Lance described to me was simple and refreshing. It looked like Figure 1.1.

Design thinking is unique because it gets people involved from the get-go. The very first thing we'd do is customer discovery—to understand the real issues of managing pain from the *customer's* point of view,

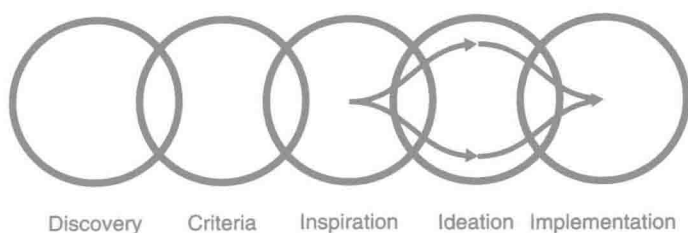


Figure 1.1 Design Thinking Process

rather than *my* point of view. Is managing pain *really* a problem for people? Connecting with people and hearing their stories lets us gain empathy for the individuals, and also helps us define and validate our problems.

So that's what I did. Luckily, I had already expedited this step through many previous conversations around pain, but to put the structure I needed around it, I spoke with several individuals, through workshops and one-on-one interviews, to dive deeper into their pain stories and experiences. I wanted to understand both their obvious needs and their *latent* needs—needs that may be more difficult to articulate. But my customers weren't only those individuals experiencing pain. It was important to extend my understanding to their network of interactions and to hear how the issues affected them as well. So I connected with those who treat and manage pain; medical professionals such as physical therapists, pain medicine specialists, and chiropractors play an important role in the management of pain.

At the end of these conversations, I had defined and validated multiple problems from the patients' and the providers' points of view. It turned out that there were just as many problems on the provider side in managing pain as there were on the patient's side, and this shed light on what some of the barriers in pain management are. Most important, though, I gained a sense of *empathy* for both the patients and providers—the first and foundational component of human-centered design. It's something we don't do in healthcare as much as we should, even though we strive to be a patient-centric system. Taking this step before any discussion of the technology or design of the product was eye-opening and put me in a much better position to create something that met both the functional and emotional needs of individuals.